

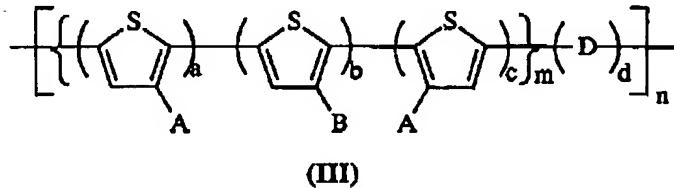
63/3164

Application No. 10/042,360

--Illustrated in copending applications U.S. Serial No. 10/042,358, U.S. Serial No. 10,042,342, U.S. Serial No. 10,042,356, U.S. Serial No. 10/042,357, U.S. Serial No. 10/042,360, the disclosures of which are totally incorporated herein by reference, and filed concurrently herewith, all titled "Polythiophenes and Devices Thereof" and all filed January 11, 2002, are polythiophenes and devices thereof. The appropriate components, processes thereof and uses thereof illustrated in these copending applications may be selected for the present invention in embodiments thereof.--

IN THE CLAIMS:

Please substitute the amended Claim 1 for pending Claim 1 as follows:

1. (Amended) A symmetrical polythiophene

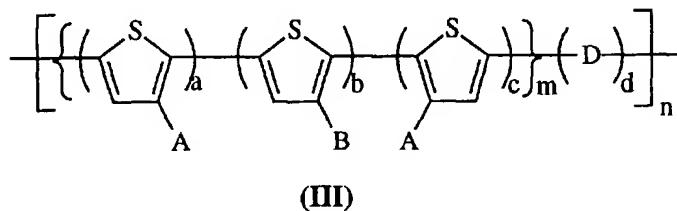
wherein A is a side chain; B is hydrogen or a side chain; D is a divalent linkage; a and c represent the number of A-substituted thiophenes; b is the number of B-substituted thiophene segments; d is 0 or 1; and n represents the degree of polymerization.

Please add the following new Claim 28:

28. (New) A polythiophene in accordance with claim 1 with a conductivity of from about 10^{-8} to about 10^{-9} S/cm.

WHAT IS CLAIMED IS:

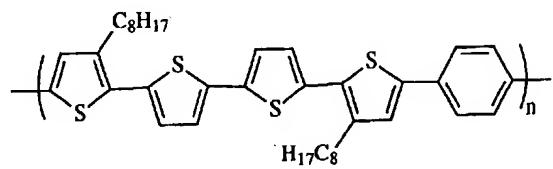
1. A polythiophene



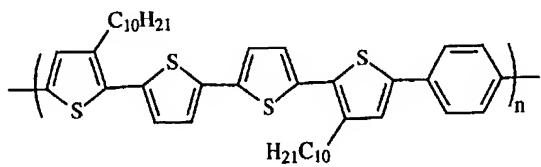
wherein A is a side chain; B is hydrogen or a side chain; D is a divalent linkage; a and c represent the number of A-substituted thiénylenes; b is the number of B-substituted thiénylene segments; d is 0 or 1; and n represents the degree of polymerization or the number of the monomer segments.

2. A polythiophene in accordance with **claim 1** wherein A contains from 5 to about 25 carbon atoms; said B side chain contains from zero to about 4 carbon atoms; said D is optionally comprised of a saturated moiety of alkylene, -O-R-O-, -S-R-S-, -NH-R-NH-, wherein R is alkylene or arylene, or an unsaturated moiety of arylene or heteroaromatics; a is from about 1 to about 8 and c being from 0 to about 8, and b is from zero to about 6.

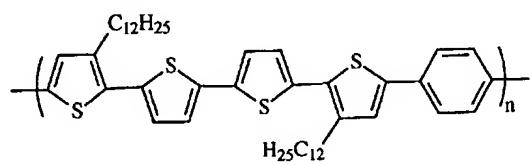
3. A polythiophene represented by



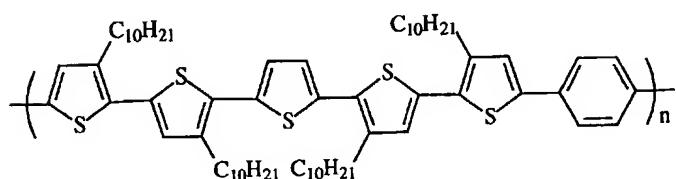
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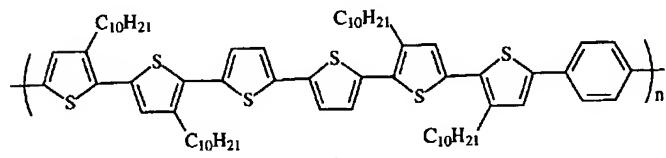
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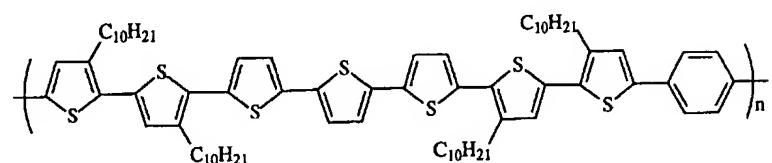
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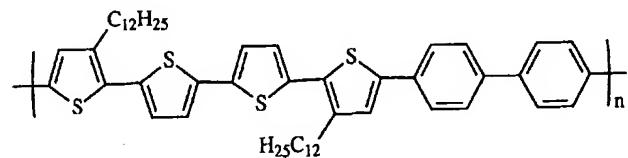
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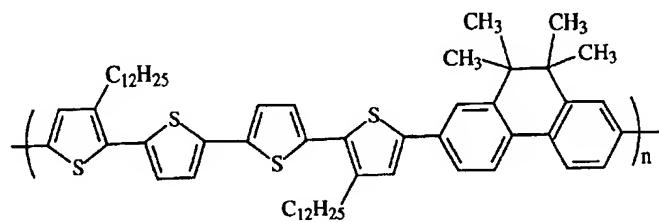
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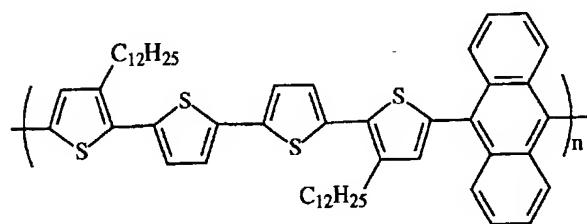
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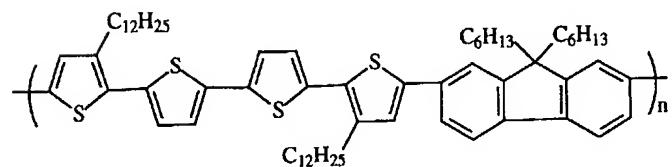
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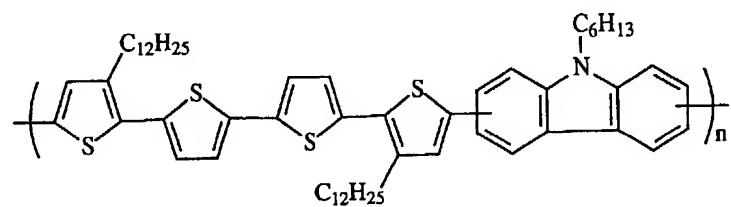
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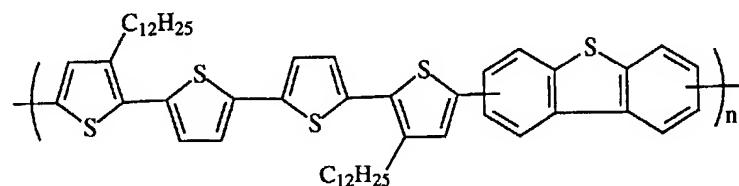
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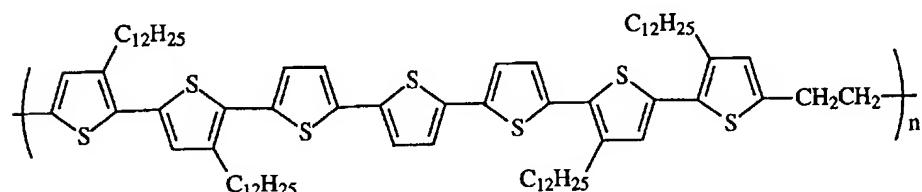
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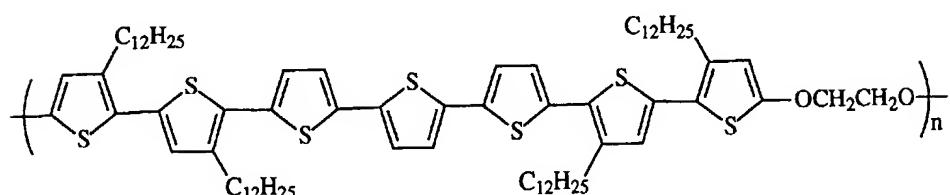
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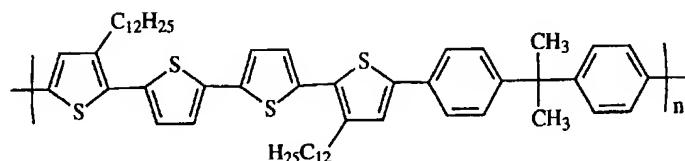
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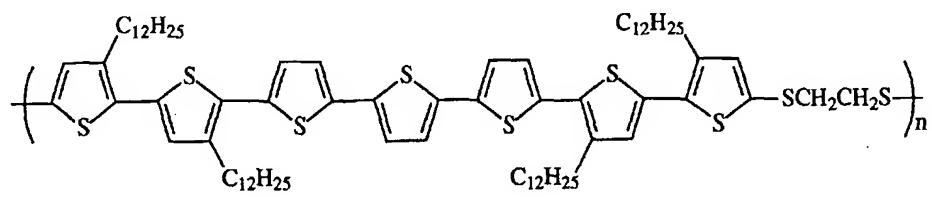
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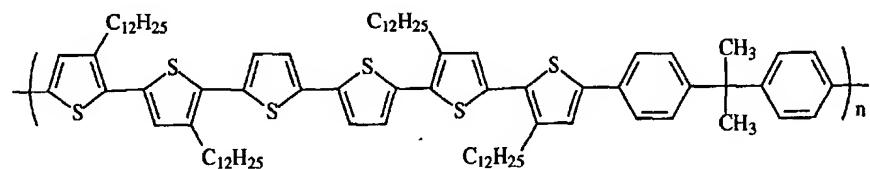


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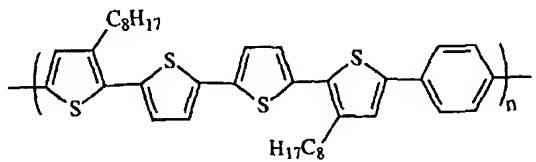
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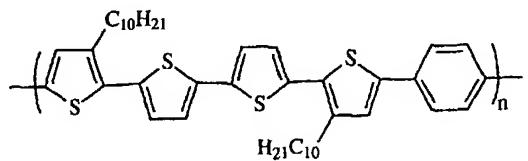
(17)

and wherein n represents the number of segments.

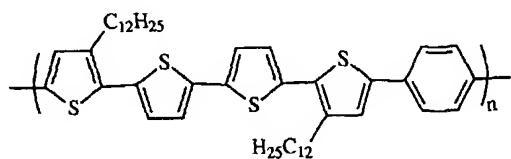
4. A polythiophene in accordance with **claim 1** wherein
said polythiophene is represented by the following formulas



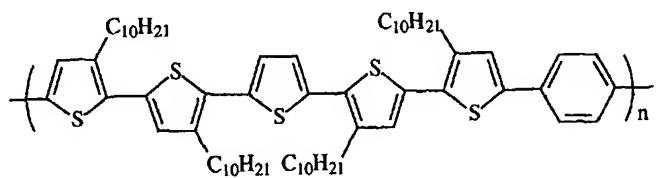
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(2)



(3)



(4)

5. A polythiophene in accordance with **claim 1** wherein A is
alkyl, and said B side chain is alkyl.

6. A polythiophene in accordance with **claim 1** wherein A is alkyl containing from about 1 to about 25 carbon atoms, and B is alkyl containing from 0 to about 4 carbon atoms.
7. A polythiophene in accordance with **claim 6** wherein A contains from about 5 to about 25 carbon atoms, and B contains from 0 to about 4 carbon atoms.
8. A polythiophene in accordance with **claim 1** wherein a is from about 1 to about 7.
9. A polythiophene in accordance with **claim 1** wherein b is from about 1 to about 7.
10. A polythiophene in accordance with **claim 1** wherein d is zero.
11. A polythiophene in accordance with **claim 1** wherein d is 1.
12. A polythiophene in accordance with **claim 1** wherein n is from about 5 to about 5,000.
13. A polythiophene in accordance with **claim 1** wherein n is from about 5 to about 3,000.
14. A polythiophene in accordance with **claim 1** wherein n is from about 10 to about 1,000.

15. A polythiophene in accordance with **claim 1** wherein A is alkyl containing from about 6 to about 25 carbon atoms; B is hydrogen or alkyl containing from 1 to about 3 carbon atoms; D is arylene or dioxyarene, each containing from about 6 to about 40 carbon atoms, or alkylene or dioxyalkane, each containing from about 1 to about 20 carbon atoms.

16. A polythiophene in accordance with **claim 1** wherein A is alkyl containing from about 8 to about 12 carbon atoms, and B is a hydrogen atom.

17. A polythiophene in accordance with **claim 1** wherein A is alkyl containing from 5 to about 15 carbon atoms; B is a hydrogen atom; D is arylene; a, b, c, and m are independently selected from the numbers 1, 2, and 3; and d = 1.

18. A polythiophene in accordance with **claim 1** wherein A is alkyl containing from about 8 to about 12 carbon atoms; B is a hydrogen atom; D is arylene; a = c = m = 1; b = 2; and d = 1.

19. A polythiophene in accordance with **claim 1** wherein n is from about 5 to about 5,000.

20. A polythiophene in accordance with **claim 1** wherein the number average molecular weight (M_n) of (III) is from about 10,000 to about 30,000, and the weight average molecular weight (M_w) is from about 15,000 to about 100,000.

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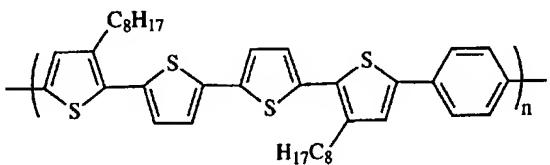
21. A polythiophene in accordance with **claim 1** wherein the number average molecular weight (M_n) of (III) is from about 2,000 to about 100,000, and wherein the weight average molecular weight (M_w) is from about 4,000 to about 500,000, each as measured by gel permeation chromatography using polystyrene standards.

22. A polythiophene in accordance with **claim 1** wherein A is hexyl heptyl, octyl, nonyl, decyl, undecyl, dodecyl, tridecyl, tetradecyl, or pentadecyl.

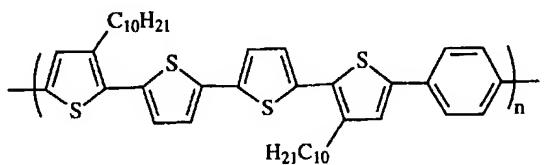
23. A polythiophene in accordance with **claim 1** wherein D is an arylene selected from the group consisting of phenylene, tolylene, xylylene, biphenylene, substituted biphenylene, fluorenylene, phenanthrenylene, dihydrophenanthrenylene, dibenzofuranediyl, dibenzothiophenediyl, and carbazole-diyl.

24. A polythiophene in accordance with **claim 1** wherein D is saturated linkage selected from the group consisting of alkylene, dioxyalkane, dioxyarene, and oligoethylene oxide.

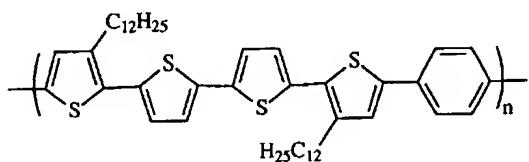
25. A polythiophene in accordance with **claim 1** wherein said polythiophene is represented by or encompassed by the following formulas, and wherein n represents the number of repeating segments, and is a number of from about 5 to about 4,000



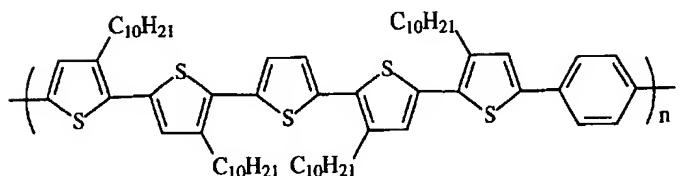
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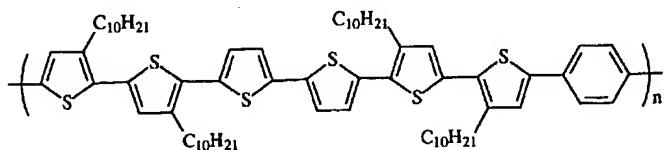
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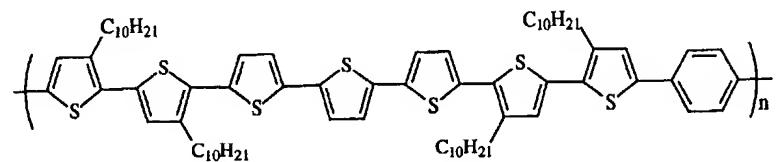
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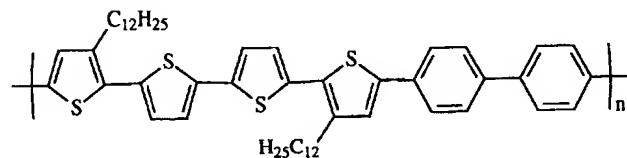
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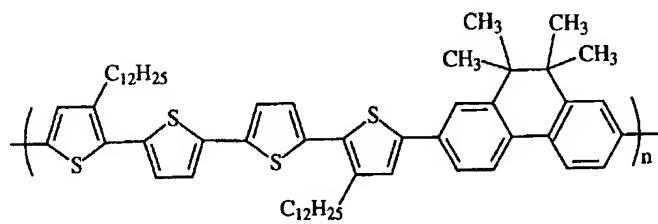
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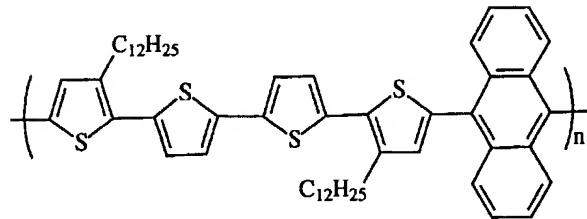
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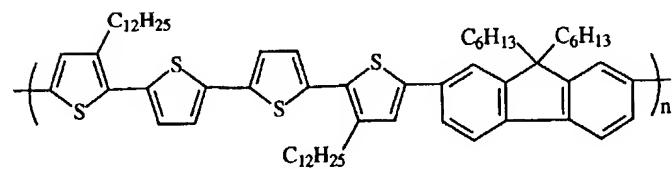
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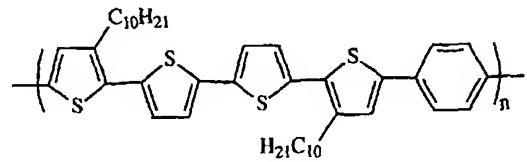


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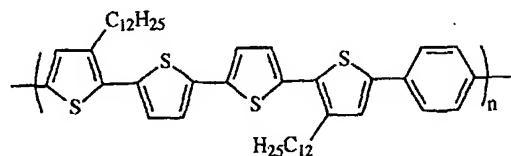


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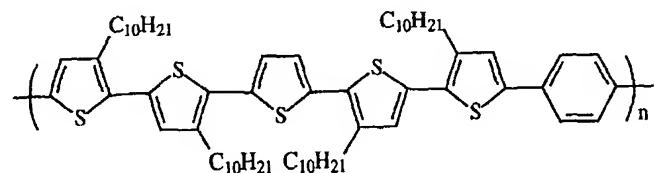
26. A polythiophene in accordance with **claim 1** wherein
said polythiophene is



(2)

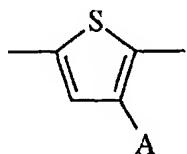


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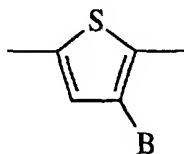


(4)

27. A polythiophene wherein the monomer segments thereof contain



(1)



(II)

—D—

wherein A is a side chain; B is hydrogen or a side chain; and D is a divalent segment, and wherein the number of A-substituted thiénylene units (I) in the monomer segments is from about 1 to about 10, the number of B-substituted thiénylene units (II) is from 0 to about 5, and the number of divalent segments D is 0 or 1.